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ON

THE PREVENTION AND CURE

OF

SPINAL CURVATURES

AND

DEFORMITIES OF THE CHEST AND LIMBS:

BEING

THE RESULT OF MANY YEARS EXPERIENCE.

BY

MRS. GODFREY,

RENSHAW STREET, LIVERPOOL.

LONDON:

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PREFACE.

The writer of this little work has frequently and earnestly been requested to lay before the public her plan of treatment for spinal curvatures and other deformities of the body; and long ere this would have been prompted, by her desire of lessening in some degree the amount of human suffering, to comply with the request, but for the following reasons—namely, the desire for increased knowledge and experience; the want of time in consequence of constant attention to patients; and the hope that some one more suitable for so important a work would undertake it. But though many able works on spinal and other deformities have been published, in which she

has seen much to admire, and much that has served to confirm her own views of the subject, she has hitherto met with none to which she could refer the reader for a knowledge of the treatment which, after long experience, she has found to be the most successful, and therefore now ventures to recommend.

To the praise of authorship or profound science she is conscious of possessing no kind of claim, but has the fullest assurance that what she has written, if duly attended to, will be the means, under Divine Providence, of preventing a large amount of bodily suffering and mental anguish; and should this be the case, it will afford her ample satisfaction, in the absence of every other kind of reward.

April 2nd, 1851.

ON

THE PREVENTION AND CURE

OF

SPINAL CURVATURES.

PART I.

My attention was first directed to this subject by the circumstance, that patients who came to consult my husband for affections of the spine, &c., frequently requested me to be present during their examination, or to examine them myself previously to their seeing him. Among these there were some who, suffering greatly from spinal curvature, entreated that something might be attempted for them; and the distress which they manifested awakened in me an anxious concern to discover if possible a remedy or relief for so painful a malady. At that time few works had been written on the subject, nor with what I had seen could I altogether concur; and

human aid being unattainable, I was led to seek wisdom from God, in order that I might discover the cause of the deformity of those bodies he had so beautifully formed; determining at the same time to study the anatomy of the human frame, in order that I might ascertain the situation of the nerves and muscles. I was much delighted by the discovery that every muscle terminated in a tendon, and each tendon was inserted in a bone; as this discovery gave me a clear idea of the plan of treatment to be adopted, and was the lever of my hope.

At this time a lady came to my husband in a state of great suffering, from a displacement of the joints of the vertebræ; two being inclined to the right and two to the left, from the fourth to the tenth dorsal. She requested me to examine her, and with this lady I made my first attempt. She was ordered to take the medicated vapour bath, for the purpose of subduing inflammatory symptoms; after which, while the muscles were relaxed, the joints readily yielded to pressure, were soon restored to their right position, and the pain left her.

This was a singular case, the only one I have ever seen of the same description.

Another lady came soon after, who was labouring under a severe attack of asthma; she had also an enlargement of the right shoulder, with lateral curvature of the spine, extending from the second to the seventh dorsal vertebra; the shoulder was elevated three inches above the spinal column. Her mother, seeing the benefit the other patient had received, entreated me to do something for her daughter. I told her it would give me great pleasure, could I ensure success, though it would be my first attempt in a case of that nature; yet, as her daughter was under my husband's treatment for her other indispositions, I would undertake it. I began with much anxiety, yet with hope and confidence that no injury could be done by the means to be employed. The young lady's state of health being exceedingly delicate through the anguish she endured from spasmodic asthma, no exercise could be employed but that which was passive, the operation of which was very soothing and grateful; when the fingers were gently but firmly

pressed down upon the extreme muscles, she experienced great relief. During the operation over the sternum the breathing became more free. A plan of diet was prescribed, with the use of Whitlaw's vapour bath, prepared suitably for the complaint; and the action of the lungs, by thus inhaling the medicated vapour, was restored. She was allowed to take short walks in the open air, and when at home directed to keep the recumbent position, alternately with sitting on a chair with an inclined back. At the end of nine months she was straight and well, and sufficiently strong to go to a boarding school, her studies having previously been suspended for two years. The termination of this case gave me great encouragement, and induced many more to come under the treatment.

Shortly after I met with a work on affections of the spine, by Dr. Dodd; it contained much that was excellent, and great was my delight to find that many of his views exactly coincided with my own; but, on proceeding through the work, it was evident that his observations had been founded on theory, without his having

worked down upon the displaced ribs, or he would not have formed the erroneous hypothesis, that the deformity of the back proceeded from the spine being rotated and not curved. He drew this inference from the circumstance that, when the lumbar vertebræ had deviated from the perpendicular line, hard substances were to be felt, which he considered were the spinal processes, turned up through the rotation. A case of this kind had been under my care, previous to my reading the above work, and on examination my mind had formed the same conclusion; but after two months' treatment, with the use of the vapour bath and manipulation, the thickened convexity over the pelvis became sufficiently relaxed to enable me to ascertain that, instead of the spinal processes being turned up, three of the short ribs had been displaced, the points of the two lower ones having deviated from their right direction, and become fixed on the pelvis; the one above was pushed up under the eighth dorsal rib, thereby elevating the ninth, and causing the tenth to form an arch near its articulation. The deviation of the vertebræ had in-

creased the convexity, and caused the lower ribs to rise at their thickest part; and, through their displacement, the muscles were so congested, where the hollow of the waist should be, as to give the appearance of an enlargement of the hip-joint. This, together with the shortening of the leg two inches, had misled the judgment of that great man, the late Mr. Liston, under whose care she had been some months without having attained any benefit; considering it to be a disease of the hip-joint, he had ordered her to wear a high-heeled boot. After this she consulted Sir Astley Cooper, who recommended a support to be made, according to his direction; this not only failed to give relief, but injured the shoulder-blade, which was elevated in consequence of five of the vertebræ having deviated one inch from the line. When this lady first came to me the supports and stays were, at my request, laid aside; and, instead of them, a bodice, made in the same manner as her dress-body, was substituted. Manipulation of the intercostal muscles, with the use of animal oil, was resorted to; and the fingers were forced as low as possible between the

ribs on the left side, which were much depressed and inverted, causing the shoulder to sink. The muscles between the extended ribs of the right side were worked down upon, and the ribs compressed together with both hands, with a view to make them approximate, thereby attenuating the muscles. By this method the left side derived equal benefit with the right; for it is remarkable to see how the left ribs extend, and the muscles rise, while those on the right are pressed together. Some idea may be formed of the effect produced, by obtaining the skeleton of any little animal, and pressing the ribs together on one side; which will cause those on the opposite side to expand, or equally, if opened, cause them to be compressed.

In connexion with the above treatment, the lady was put under a course of extension exercises, resting in the recumbent position between them. She commenced her first daily exercises in a cold room, thirty minutes before breakfast; after breakfast she sat or walked an hour; then the exercises were continued until her dinner hour, after which she rested; and after tea one

hour more was devoted to the exercises. At the end of six months her figure was quite perfect. Few cases of this kind are so soon restored, but her health was good, the bones and muscles were equal in strength, and, along with great energy of character, she had a cheerful disposition.

During those six months many slight cases came under my care, and were restored. Since that time several works have been written on spinal diseases, many of which contain much that is excellent. I feel truly thankful they are published, and to find that so many eminent surgeons are devoting their attention to so interesting a part of their profession; but nothing I have read exactly meets my own views of the subject, which have been founded upon the work of my own hands. No theory can be correctly made without it. Post-mortem examination can discover much, but the living subject alone can reveal clearly the nature of a case and how it should be treated, since nearly all cases differ in some degree, and great assistance may be derived from the patient's own expression of his feelings.

The joy and gratitude of the young lady alluded to, and of her mother, were warmly expressed, and the pleasure and satisfaction it gave me, to find my most sanguine expectations exceeded, led me to pursue the treatment with greater confidence, varying it, however, according to the nature of the case; as the treatment, which would speedily restore one patient, would greatly injure and retard the recovery of another.

Machinery, as recommended by some, forms no part of my treatment, with the exception of weights, attached to cords, to be drawn up and down, and a gymnastic ladder. Much mischief is frequently done by overstretching the tendons and muscles; and in some cases the spinal cord has been so much stretched as to paralyze the lower extremities. Shampooing is frequently recommended, but in a vague manner. Where there is no deformity, manipulation, percussion, and friction, may be employed with great advantage by a shampooer, although ignorant of the physiological principles of the structure of the body. In many instances it greatly soothes and

relieves the nervous system, by stimulating and relaxing the muscles; but where deformity exists no friction should be attempted but by a skilful person. It is well known that active friction will increase the bulk of the muscles; now let an ordinary shampooer be put to rub a back with lateral curvature, the hardest friction would be upon the enlarged part, thereby increasing, instead of diminishing the size. Friction on the spinal column is sometimes very injurious, frequently producing inflammation of the sheath of the spinal marrow; and, where there is an extensive lumbar curve, it is impossible to say what evil may not arise from heavy pressure, as in some cases the short ribs have been pushed up so as to impede the action of the diaphragm and heart. To some this may appear a false alarm, but these observations are founded on the testimony of those who have suffered by such treatment.

Dr. Dodd, for instance, in his work on the subject, declares his experience of the evil effects of friction by an unskilful person. In friction,

flour is substituted by many in preference to oil, from its being cleaner; for a short time I made use of it, but did not find that it afforded the same nourishment, or strengthened the parts so soon as the animal oil, which is more effective in softening the gorged vessels and contracted tendons and muscles.

Could those, moreover, who have adopted the plan of cutting down on the muscle, have seen the effects of this treatment, it might have convinced them that the plan of loosening the muscle from the bone would have done all they intended, without the pain and delay occasioned by the incision; for, while the membrane lining the muscle secures it from injury, the patient must be kept in the horizontal position, with arms and shoulders confined with straps and weights during the healing process. The consequence is, that the depressed intercostals on one side, and the enlarged ones on the other, cause the concave and convex sides of the curvature to remain precisely the same as they were before the operation.

A lady, between thirty-five and forty years of age, who had suffered from paralysis and curva-

ture of the spine, came under my care. Through the length of time the disease had existed, much foreign matter had been thrown up between the expanded ribs. After being under my plan of treatment a few months, her bones, being flexible, yielded more easily than could have been expected: the depressed ribs on the left side began to expand, the thoracic region rapidly improved, and the paralyzed foot obtained a slight movement. A short time after this she heard of an establishment, near London, where machinery was employed. Hoping to facilitate her recovery, she availed herself of it, and was under that treatment twelve months. While there she recovered from severe headache, from which she had been suffering some years previous to her coming to me; she also obtained an increased movement of the paralyzed foot. But the machinery produced a displacement of three of the short ribs below the angle on the left side, causing two of the short ribs on the right side to be jerked up beneath the angle, so as to push up the seventh dorsal rib. The ankle of the right leg was also greatly injured, and she experienced much incon-

venience through friction by an unskilful shampooer, although the proprietor of the establishment paid great attention to the direction of it.

This lady often spoke to him of my plan of treatment, and requested he would get a more efficient person for that department, for she was not aware of the difficulty of procuring such a person. Finding that her suggestions were not attended to, she returned to me again, and while I was much pleased with her improved state of health, which might be attributed to change of air, I was surprised to find so much mischief done; for it required several weeks' treatment before the displaced bones could be restored to their proper position. She frequently expressed a wish that both plans of treatment could be united — a desire which arose from a mistaken idea that the violent exercise of the machinery was more effective.

Could a flint feel, it would be in greater dread of a blow given by a large hammer, by a powerful arm, while lying on the ground, than it would of a gentle blow, from a weaker hand, while placed on a soft pillow, yet it would resist the

former, and be broken to pieces by the latter. There is no necessity for powerful machinery, nor advantage to be derived from it, for the most effective exercises are those which are produced by the exertion of the will, under careful direction.

Mr. Walker, in his work on the "Physiological Principles and Structure of the Body," enters so fully into my own views on the power of the will over muscular action, and is so exceedingly clear in his statements upon the subject, that I cannot forbear giving them in his own words. "The muscles, those fibres enveloped in cellular tissues, rendered red by an immense supply of blood, and generally disposed in pairs on each side of the body, are the moving powers. These bundles of muscular fibres form the layers and masses of flesh which lie between the skin and the various bones which cover the neck, the back, the sides, the pelvis, and hips, and which principally give shape to the limbs. Almost every muscle is fixed to different bones, by its extremities, and its middle in general passes more loosely over one or more joints, which it is desired to move.

Of the peculiar mechanism of muscular motion, it is enough here to say, that these muscles receive nerves which communicate with the lesser brain, (the cerebral, or organ of the will,) and when that organ wills a movement, it, through these nerves, excites those muscles which are to be the means of the particular operation, to shorten or swell up. Now, as the muscles cannot bring their fixed extremities nearer to each other without also bringing along with these the bones to which they are attached, the intermediate joint or joints are bent, and motion takes place in the limb, or throughout the body. The purpose of contraction being accomplished, relaxation takes place. Generally the muscles maintain a kind of counteraction, and establish an equilibrium, which contributes to maintain the primitive form of the parts. Such is the general mechanism of all our greater motions."

All artificial supports are positively injurious. Some eminent surgeons have kindly suggested them to me, as an auxiliary to the carrying out of the other plan; but, according to the principles upon which my plan of treatment is

founded, I could not consent to adopt them, as it would entirely defeat my object, which is, to give sufficient strength to enable each part to support itself when the cure is complete. Some of Dr. Dodd's remarks on this subject are truly excellent. And Mr. Ward, in his able work "On Diseases of the Spine, Connected with Impaired or Defective Motion," corroborates this view. In page 52 he says—"Various mechanical contrivances, calculated to rest on the pelvis as a base, have been resorted to for curing spinal distortions. The advocates for their adoption appear to have viewed the spine as a mere assemblage of bones which were displaced, and therefore required only external aid to replace and retain them in their position, without any reference to the natural moving powers connected with them. If the view which has been taken of the cure of the disorder be correct, that it is effected by increasing the growth and strength of the muscles connected with the spine, it will be seen at once, that, under any circumstances, such mechanical means are inadmissible, and that their use has arisen

from an erroneous view both of the general causes of the disease and of the principles upon which their treatment should be founded. Admitting that by any mechanical contrivance the spine could be rendered straight by the use of external force alone applied to it, the muscular parts would still be left in the same atonic and wasted state as before. If the inutility of these means were the only objection against the use of instruments in these cases, it would be of little importance, but unfortunately they are too frequently injurious, by causing such a degree of pressure on the bones of the pelvis, in an improper direction, in a weakly subject, as would cause them to give way even in a healthy person. The observations of Mr. Wilson on the subject, with reference to this point, are important, as being the result of examinations after death, and are therefore entitled to considerable attention."

Constant recumbent position is also very injurious and debilitating to the constitution. There should be a change of posture from lying to sitting in a chair with an inclined back, and *vice versâ*, with exercises between, extending from

fifteen to twenty minutes, as the strength of the patient will permit. Each patient's chair should also be adapted to the nature of the curvature. Reading for a long time together should not be allowed when the patient is in the horizontal position, or the eyes may be severely affected; neither is it good for the patient to be constantly stretched out at full length; the muscles should rather be relieved by the drawing of the feet up, then forcing them down again, and sometimes by turning on the face a few minutes; this will give strength and comfort to the body. Dr. Dodd has some excellent remarks upon the injurious effects of remaining too long on the back, and also from the use of upright chairs; but I cannot agree with his view of lying on a couch so formed that the head and feet should be elevated, in order to keep the muscles of the back in a state of relaxation, this position being exceedingly injurious to the thoracic region and cervical muscles. It appears to me that the more freedom every part has, the more it improves, provided the weight is taken off the spine. The following example will show what can be done without any of these artificial means.

A lady, twenty-six years of age, was brought to me with an extensive lateral curvature of the spine. Her body was perceived to lose its balance when she was about fourteen years of age. A medical friend was consulted, and she was ordered to the sea side, with the view of strengthening her frame, which it did in a slight degree; but the disease was not arrested, and her face began to wear a look of anxiety, from constant pain and uneasiness. The next year another medical gentleman was consulted; and again bracing sea air was recommended, but without the least benefit. Her strength now began to give way. Her medical friend was again consulted, by whom supports were ordered, with frequent visits to the sea side. All this was attended to, yet the disease rapidly increased. The spine had three curves, one above the left shoulder from the first dorsal to the fifth; on the right side there was another, from the fifth dorsal to the eleventh; and on the left side the curve extended from the first lumbar to the fifth; the first, second, and third dorsal ribs were elevated two inches above the top of the shoulder, the corresponding ribs on

the right side being inverted in proportion to the convex on the left. Through the extensive curve at the right shoulder, five of the dorsal ribs were raised up over those which had sunk down, causing the blade of the shoulder to be raised up nearly horizontally over them; thus pushing the head of the bone of the arm, and twisting the arm round, so as to make the first finger rest on the side, with the hand turned to the front of the body. The supports had pressed against the side of the elevated ribs, and forced them back over the curved joints, creating the appearance of a second spine, raised five inches above the column. The intercostal muscles were exceedingly congested, through the expansion of the ribs. In proportion to the enlargement of the right side, the muscles on the left were attenuated, the ribs inverted, and the point of the shoulder was sunk into a deep hollow. The left lumbar curve had produced a convexity of the short ribs, and displaced them; the points of two were forced up under the angle of the long ribs; the other three were pushed down upon the pelvis; and the muscles between the ribs were so

thickened as to feel like a hard bony substance; the ribs were elevated three inches above their natural position. On the right side there was a corresponding hollow, and the angle of the long ribs could not be felt. The intercostal muscles of the short ribs were entirely depressed, so that the whole of the hand could be laid in the hollow without being seen. There was a corresponding displacement of the bones of the chest; on the left side there was a deep hollow, on the right an elevation of four of the ribs; and while the right clavicle was inverted the left was elevated. The patient, who while standing was of the middle size, appeared when sitting no taller than a child seven years of age. It was indeed most painful to see a form which would have been so lovely, destroyed through the want of proper treatment at the commencement of the disease; not that her medical attendants were to be censured, for it was not at that time believed that there could be a remedy. My first impression on examining the back was, that nothing could be done for its improvement; but after a little consideration I was led to hope, from the

success of other cases, that a longer period of time being given, with adaptation of treatment, some relief might be afforded.

The promise to make the attempt greatly cheered the patient. Her supports were removed; but from the use of them the muscles had become so weakened, that, when she came to me the following day without them, she was obliged to be placed in the recumbent position in her carriage. Her debility being so great, the friction and exercises were proceeded with very gradually; her strength, however, daily increased, and after a month she was able to employ a considerable part of every hour before dinner, and an hour in the evening, in various exercises. At the same time she most diligently and perseveringly attended to every direction given, and to the plan of diet laid down for her. The improvement now, each week, was very striking. By the end of three months the ribs on the right side so approximated, that a bag of skin which would have held a pint of liquid hung loosely down, having lost its elasticity through its having been so long stretched by the expansion of the

ribs. The exercises, however, soon brought back its contractile powers, and the muscles on the left side grew so fast, and so expanded the ribs, that she could feel the point of the shoulder, which she had not done for some years previous. Nor can I describe the joy she felt at this discovery. In proportion to the growth of this side was the diminution of the size of the other; the shoulder had returned to its right place, allowing room for the arm to fall into its proper position. In three months more the shoulders were both low and sloping, the neck had resumed its natural appearance, the enlargement over the left hip was much lessened, and the spine much stronger; the middle curve had straightened two inches, and each of the others one inch. Her appearance now with a thin shawl over the shoulders was almost natural. In consequence of domestic affliction she was compelled to return home. After a few months she came back to me again, and continued altogether two years; at the end of this time the back was nearly straight, each curve being within a quarter of an inch of the perpendicular line; the flesh of the left side

looked like that of a young child, and with a thin covering over her shoulders no deformity could be seen, her figure looking good and natural. For this case to have been complete, she should have been with me one year longer. I have just had the pleasure of seeing this lady, after an absence of four years, and it gave me great satisfaction to find her nearly the same as when she left me.

A variety of cases came under my care during the time this lady was with me, both lateral and angular, and many since, which have been either quite restored or greatly benefited. But to give them in detail would defeat the design of this little publication, which is, to lay the subject, if possible, before the view of every mother and guardian.

Another kind of deformity to which I wish to direct attention, consists of affections of the limbs, of which, however, I shall bring forward only two examples, merely for the purpose of introducing the plan of treatment.

A little boy, four years of age, came under my care, who had the upper part of his legs bowed outwards, through being put on a rocking-horse

when too young, so that the knees met; the two bows forming a circle The means employed for his recovery were bathing in a strong solution of sea-salt and daily friction, with the use of animal oil. After the bath and friction the child was placed on the floor, and from the knees upwards the legs were rolled with a linen roller, two yards long, and a quarter of a yard wide, folded once. In this position he was kept one hour; the rollers were then removed, and he was made to draw his legs up, and return them forcibly to the straight position. After this had been done a few times, he remained in the recumbent position one hour, rolling about and amusing himself in any way he pleased. He was then sent out in the open air, in a child's carriage, from one to two hours. The rest of the day he was allowed to jump about, a few minutes, and then lie down; and up and down in this way he continued the entire day. At the end of three months from the commencement of the treatment the boy was straight, strong, and healthy, without the aid of irons or other supports.

When the legs are bowed below the knee, the

same treatment is required, but the rollers should be put on with splints, each leg being rolled separately. The splints should be sufficiently long to reach from the knee to the ankle; the rolling should commence at the lower part of the leg, and *vice versâ*, if the bow be near the knee. The utmost care is required in putting on the rollers, or the evil may be increased.

Improper friction might also do much mischief, and no hard pressure sholud be made with the hand on the concave side; neither should quick friction be applied to the convex, lest it should thicken the already too large muscle. On the concave, the flesh should be drawn up by the hand, as a sponge, when we squeeze out the water; this loosens the skin, and makes room for the bone to return. On the convex of the bone, the hand should be steadily and firmly pressed, rubbing gently up and down, while the other hand, at the same time, should be extended from the knee to the ankle; or a splint lined with flannel should be placed on the concave side, if the hand be not long enough.

Let these directions be strictly attended to,

and the cure will be very speedy, if the deformity has not been of long standing; but if it have been from birth, the integuments being thickened and contracted, it will require a much longer time.

The second example is one of displacement of the bones of the knees, being what is commonly called knock-knee'd, in the case of a young lady eighteen years of age. When twelve years old, it was observed that she felt fatigued, after walking, and expressed a desire to be allowed to sit while her companions were at play. As she had previously been a very active, sprightly girl, this excited some uneasiness in the minds of her friends, and an eminent surgeon was consulted, who recommended iron supports, with the use of which she was enabled to walk with less fatigue. Hope was now entertained that her health and activity would soon be restored. She continued to wear them two years; when, however, she again called the attention of her friends to the appearance of her knees, which had become much enlarged: they, thinking the supports had been injurious, threw them aside, and sent her to take

lessons in dancing, in which she greatly delighted, and, strange to say, so much excelled, as to prevent her friends from detecting the progress of the disease; although it so rapidly increased, that, when the knees were not folded over each other but the insides brought together, the ankles were one foot apart, so that the height of her body was diminished not less than six inches. Yet this was attributed to the want of growth, until, through a fit of illness, the deformity was discovered and great alarm excited. Surgical aid was again called in, and the complaint pronounced to be an enlargement of the knee-joint and treated accordingly; yet there was no improvement, and her health gave way to such an extent, as to excite great anxiety in the mind of herself and friends.

She was then recommended to come to me, and on the first examination I was apprehensive that the diagnosis was correct. On the back part and outside of the knee the ligaments were greatly contracted, so as to cause an inversion of one inch and a half deep; while, on the outside, the head of the thigh-bone projected over the

bone of the leg, causing the appearance of considerable enlargement of the joints.

She was laid on a spring couch, and the back and sides of the joints of the knees were worked down upon with the tops of the fingers, to relax the tendons. Animal oil was freely used, and the upper part of the leg was also manipulated. After this treatment had been adopted for about a fortnight, it appeared clear that no real disease existed, but merely what arose from the displacement of the bones, as above described. This being ascertained, the friction was daily continued one hour; after which she was placed on a soft rug on the floor, and the legs, beginning at the ankles, were drawn together with a roller three inches in width when folded. After this plan had been pursued two months, there was evident improvement; the ankles having approximated three inches, and not the slightest inflammation having taken place. From this time the legs were each day placed on a frame, where they were drawn gradually to their right position by straps and buckles, and in this position they continued one hour in the morning and one in the

evening. Together with this, the patient was put on a course of exercises, suspending herself from a ladder and stretching herself to the utmost, and then lying down to exercise the muscles, by drawing up the legs and returning them with great force; after which she stood with her back against the wall, with her feet firmly fixed on the ground, and her knees brought as near together as possible. These exercises, which occupied a quarter of an hour each, were constantly changed. It must not be omitted that, in consequence of wearing iron supports, the straps which fastened them had displaced three of the short ribs and caused a curvature, extending to five of the lumbar vertebræ on the left side; four of the dorsal vertebræ on the right side had also deviated from the column, causing a slight elevation of the shoulder. In consequence of the first curve there was a convexity over the lower ribs on the left side, and a corresponding sinking on the right. This also tended to diminish her height. The same plan of treatment described in the former cases were employed in this, varying the exercises of

the back with those of the limbs. She was allowed to take short walks in the open air, increasing the distance each day. This lady was with me eighteen months, at the end of which her back was straight and well formed; the bones of the knees were restored to their proper place; and her height had increased several inches. She was advised to continue her exercises for some months after her departure.

It has not unfrequently happened, that after a patient has been under my care a short time, the friends have thought they could carry out the same kind of treatment; and by getting a ladder, pulleys, &c., by keeping up the extension exercises, and employing frictions, that they might complete what had been begun. They were not, however, aware that each month presents some new phase to the case, as the bones return to their normal condition.

The mother of one of my patients told me she had devoted four hours daily to the friction of the back, but each month the deformity had increased. She requested to have the same kind of oil I had used; but the secret was not in the

oil. Yet it is important to employ proper animal oil, which, being free from acid, is more softening and nourishing to the muscles, and consequently greatly facilitates their growth. Where a patient has been so delicate that active exercise would have been injurious, the growth of the attenuated muscles has been rapidly promoted by carefully working down upon their extremities, and by the free use of the oil. But having laid before my readers the plan of treatment I wish to recommend, in observations and examples which, I trust, will make it sufficiently clear to be understood, I shall now direct their attention to various matters of dress, position, exercise, and diet, by which curvatures and other deformities are frequently produced.

PART II.

Much has been written, and many lectures have been delivered, on the baneful effects of stays, and especially for growing girls, in consequence of which considerable alarm has been produced in the minds of many parents. Fathers especially have concluded that all deformities of the trunk have arisen from this cause, and that the prohibition of them would secure fine and graceful figures for their daughters. With the opinion that injurious effects have in many instances been thus produced I fully concur, persuaded that perfect freedom of every part of the body is essential to health. But unless the other parts of the dress are properly adapted to the purpose of being worn without stays, much greater mischief may arise from the want of such a defence

against bands, strings, buttons, &c., which often produce a more unequal pressure.

A young lady has just been brought to me with an extensive lateral curve of the lumbar vertebræ, though she has never been allowed to put on stays, and though the utmost attention has also been paid to her position. She has always enjoyed good health, with bone and muscle proportionately strong. Great care has also been paid to each part of her dress; and as her mamma had entertained a great horror of strings, she had carefully avoided them. Yet, on examining the dress throughout, I found one part fastened by a large button, which had evidently pressed on the right side of the fourth lumbar spinal joint, causing it to deviate from the line, and to be depressed. This was the starting point of the curve.

There was also brought to me a little girl, four years of age, suffering from an angular curve of five of the lumbar vertebræ, and projecting two inches above the column. The integuments surrounding this curve had greatly thickened, and the spinal ribs were drawn from their proper

position, causing on each side a deep hollow over the hips. As the disease had advanced so far, notwithstanding the early age of the patient, it must evidently have commenced in infancy. I immediately inquired if her nurse had fastened the band of the small flannel tightly round the waist. Her mamma replied that the monthly nurse had always done so, for the purpose of strengthening her loins. But if this lady had understood the structure of the body, she would have known that such treatment, instead of giving strength, could tend only to destroy the foundation of it, by pressing in the short ribs and joints of the spine.

It is not my intention to speak of the treatment of these cases; I merely notice them, to show what in dress should be avoided. Many attempts have been made to improve the first dress of infants, but nothing that I have seen is sufficiently simple: in all, there are too many knots and buttons, which, when the back is in the recumbent position, may press some of the vertebræ and flatten the joints, and thereby lay the foundation for curvature. Swaddling clothes

would probably be too loose for the temperature of this climate; but each article of dress should be so made that one belt on the outside of the garments would be sufficient to confine them, and that belt should be fastened in the front by a flat, soft button, and by no means should be tight. When children are a little older, they are made to wear trousers fastened by a large button, which has been a frequent cause of curvature. If the button is pressed against the side of the bone, the curve will be lateral; if upon the top, it will be anterior, causing a projection above the bone, which is flattened. "Hooks and eyes" are also in some instances enemies to the figure. At the bottom of the frock-bodice, especially, great care is required, or the consequence may be either an inflammation of one of the joints, irritation of the whole spine, or the formation of an ulcer. These articles of dress are left too much to the nurse, who frequently feels a pride in seeing the child look small in the waist.

The shoulder-strap is another source of mischief. It prevents the arm from having that freedom which a child requires for the proper

exercise of the limbs, which in healthy children are always in action. In order to get release from the constraint they feel, they push up the shoulder. The following case will illustrate the above observations:—

On examining a little girl, whose left shoulder was considerably elevated, I found five of the ribs under the shoulder-blade greatly depressed. Her mamma expressed great surprise at this exhibition, because her daughter had never worn stays, and her health was exceeding good, while unequal pressure had been carefully avoided.

On a careful examination of the dress, I found she had worn a soft jean bodice with elastic shoulder-straps; these, as the child said, had often distressed her, so that, unknown to her mamma, she had withdrawn her right arm from its confinement. The consequence was, that, the loose strap falling down and drawing the top of the bodice with it under the point of the blade-bone, had flattened the ribs on the left side; and expanding the corresponding ones, on the right, under the point of the blade-bone, had pushed it up and caused a convexity of the clavicle.

Another young lady was brought to me with an anterior curve from the sixth to the tenth dorsal vertebræ. She had never worn stays, but merely a loose corded bodice. She was growing fast and, without its being observed, the bodice and straps which confined the arms had become too short. Accordingly, when not observed, she disengaged her arms from them, which caused the top of the bodice to become a thick ligature pressing on the spine and the ribs under the shoulder, producing a convexity of those below, and of both clavicles. Consequently, the shoulders were considerably raised,—the trapezius muscle, which extends from the top of the arm to the neck, depressed,—and the chest contracted. To avoid this evil, the bodice should fit at the arm-hole, and be made the same as the dress, and fasten in the front with small buttons.

The dress of children should be light and warm; for if the frame is not very strong,—which in girls it seldom is,—heavy clothing is injurious to the spine.

The dress should also be varied according to the temperature of the climate, for the purpose

of keeping up the proper action of the skin. The pockets too in children's frocks require to be examined, in consequence of their great propensity to fill them with all manner of heavy things.

An interesting little girl came to me, looking full of blooming health. Her mamma had discovered a sinking of the ribs on one side of the chest, which could not be accounted for; all her dress having been made with the utmost care, to avoid unequal pressure. On examination, I discovered four of the ribs on the left side of the sternum elevated and four on the right inverted. Finding that her dress throughout was correctly made, and that her position had been carefully watched, I caused her to be dressed before me, when the frock, on one side of the front, appeared to be drawn down lower than the other. I then requested that the pocket might be searched, and to the surprise and amusement of her mamma, it was found filled with pence, pebbles, and a heavy knife. The little creature most ingenuously told us she always carried as much in it.

My reason for mentioning these little things is to show, that, while to some stays may have been

injurious, fewer evils, as far as my experience goes, have arisen from them than from other causes. It is well known that ladies of the eighteenth century did not suffer from spinal disease in the proportion of those of the nineteenth; which might arise, in some degree, from the system of education; but some highly educated women of that period were elegant and graceful figures; and it is well known they generally wore stiff stays, though their make, it must be admitted, was less calculated to injure the figure than those of the present day. I would not, however, be considered as advocating the use of them if they can be done without; and, if they cannot, they should never be worn tight, and, to prevent injury, should be laced in front. Lacing over the spine is frequently the cause of mischief; and, where the slightest curvature exists, they never ought to be worn, for they will certainly increase the depression of the ribs.

Mr. Walker, in ridiculing the practice of wearing stays, has chosen a very homely, and not very correct, illustration of the human figure.

"The uppermost pair of ribs," says he, "which

lie just at the bottom of the neck, are very short; the next pair are rather longer; the third longer still; and thus they go on increasing in length to the seventh pair or last true ribs, after which the length diminishes, but without materially contracting the size of the cavity, because the false ribs only go round a part of the body. Hence, the chest has a sort of conical shape, or it may be compared to the common beehive, the narrow or pointed end being next the neck, and the broad end undermost. The natural form of the chest, in short, is just the reverse of the fashionable shape of the waist; the latter is narrow below and wide above; the former is narrow above and wide below."

Surely, when the idea struck him, he must have been gazing on a bony skeleton, uncovered with muscle. After reading his observations, I took the measure of a well-formed little girl, seven years of age, who had never worn stays,—and found the circumference of the bust, just below the shoulders, one inch and a half larger than at the lower part of the waist.

Close attention should be paid to the child's

position during its earliest infancy, for although there are many talented monthly nurses, there are also many destitute of experience. For the guidance, therefore, of young mothers, a few hints may be useful, since the foundation of years of misery may be laid at this period.

If the babe is made to sit up, the body is bent forward, the chest is pressed by the nurse's hand, and the back bowed; causing a depression of the inside of the spine, and an enlargement of the joints on the outside. Infants should therefore be placed in the recumbent posture until the end of the first month; and, if delicate, to the end of the second; and then should not be allowed to sit up long together.

Great regard should also be paid to the manner of their lying in bed, in order that they may not lie either with their heads high, or without a pillow; some have erred through these extremes, which cause the head to fall over the top of the shoulder.

Mr. Walker has taken great pains to ascertain the effect produced by position in bed, which he has beautifully illustrated by the plates in his little

work. In page 46, he remarks—"In sleeping on a feather bed, with high pillows, the body is not only enervated, but as we generally lie on the right side, the right shoulder is again raised, and the tendency to deviation in that direction still further increased. The spine is also twisted, and the neck turned awry.

"When two children sleep in one bed, they seldom fail, unless they change sides, to contract a habit of lying always on the same side of the body; and when this is practised every night during several years, it can scarcely fail to produce deformity."

Mr. Shaw, as quoted by Mr. Walker, also remarks—"The spine and ribs, and more particularly the shoulders, are brought exactly into the same condition, by lying on the same side, and with a high pillow, as that in which they are when distortion of the spine has actually taken place."

The manner, too, in which children are carried in the nurse's arms requires the vigilant eye of the mother. If the nurse could be persuaded to change the arm on which the child is carried, it would be better for both. Some nurses

keep the arm too much at an angle, resting their elbows on the side, and allowing the child to sit too far on the arm, with the back and the chest contracted. "This manner," says Mr. Walker, "of carrying is, even in infancy, one of the causes of deviations of the vertebral column, which is still in a cartilaginous state. The mother, or nurse, should carry the infant in both her arms, in a half-reclining position, that she may give equal support to all its parts. Neither should she leave the head, which is so large in proportion to the rest of the body, to its own weight." The sitting posture should never be continued more than ten minutes, or a quarter of an hour, nor should they be allowed to remain long in any position.

At a more advanced age, children have a habit of standing on one leg, which expands the short ribs on one side, and depresses them on the other, and may thus lay the foundation of a lateral curvature. Great mischief is done in this way to children, by their habit of standing to repeat long lessons; and it would be well if the position could be changed every five minutes from standing to sitting, and *vice versâ*.

The anxiety, too, which mothers feel for their children to sit erect, is quite a mistake. Dr. Dodd, on the sitting position, in his work on the spine, has some excellent remarks, in the course of which he denounces upright chairs; and, certainly where young people have to sit long in continuance, the seat should have an inclined back, the recumbent position being the most conducive to rest.

Mr. Ward (page 23) remarks, "Short-sightedness is one cause of excurvation of the spine; this includes the lower cervical and upper dorsal vertebræ; the frequent necessity for advancing the head forwards and downwards, as in reading, working, or drawing, will readily account for this form of complaint in those children who do not wear glasses, and the propriety of their use, either after the distortion is removed, or to prevent the recurrence of the disorder, will readily suggest itself to parents."

But as the use of glasses completely destroys the beauty of the eye, I would suggest for children a frequent change of employment; and that, when reading, they should accustom

themselves to keep the book at as great a distance as their sight will allow, which will improve the focus of the eye; and, when alone, that they should hold their book or work in such a manner as to prevent the head from bending forward.

Mr. Walker has very fully entered into the position to be observed, while sitting at the harp or guitar, or at writing or drawing, and accurately described the different appearance of the figure, when sitting in a proper or in an improper posture.

In addition to this care respecting posture, I would urge the necessity of the utmost discrimination for the regulation of exercises. When young people are strong and healthy, they are the best judges of what they can bear, and should never be pressed to exceed their strength; but the adaptation of various exercises to the constitution, as well as the time for using them, requires some knowledge of physiological principles.

A quotation, therefore, from Dr. Combe's work on this subject, may greatly assist those who have not made it their study, as well as express

very exactly the conclusions to which I have been led by my own experience:—

"The time at which exercise ought to be taken is of some consequence, in obtaining from it beneficial results. Those who are in perfect health may engage in it, almost at any hour, except immediately after a full meal; but those who are not robust, ought to confine their hours of exercise within narrow limits. To a person in full vigour, a good walk in the country before breakfast, may be highly beneficial and exhilarating; while to an invalid, or delicate person, it will prove more detrimental than useful, and will induce a sense of weariness, which will spoil the pleasure of the whole day. Many are deceived, by the current poetical praises of the freshness of morning, and hurt themselves in summer by seeking health in untimely promenades. In order to prove beneficial, exercise must be resorted to only when the system is sufficiently vigorous to be able to meet it. This is the case, after a lapse of from two to four or five hours after a moderate meal; and, consequently, the forenoon is the best time. If exercise be delayed till some degree of

exhaustion, from the want of food, has occurred, it speedily dissipates instead of increasing the strength which remains, and impairs rather than promotes digestion. The result is quite natural, for exercise of every kind causes increased action and waste in the organ, and if there be not materials and vigour enough in the general system to keep up that action and supply the waste, nothing but increased debility can reasonably be expected.

"For the same reason, exercise immediately before meals, unless of a very gentle description, is injurious, and an interval of rest ought always to intervene. Muscular action causes an afflux of blood and nervous energy to the surface and extremities, and if food be swallowed whenever the activity ceases, and before time has been allowed for a different distribution of the vital powers to take place, the stomach is taken at disadvantage, and from want of the necessary action in its vessels and nerves, is unable to carry on digestion with success. This is very obviously the case where the exercise has been severe or protracted, and the consequence is so well known,

that it is an invariable rule in the management of horses, never to feed them immediately after work, but always allow them an interval of rest, proportioned to the previous labour.

"Even instinct would lead to this conduct, for appetite revives after repose.

"Active exercise ought to be equally avoided immediately after a heavy meal. In such circumstances, the functions of the digestive organs are in the highest state of activity, and if the muscular system be then called into considerable action, the withdrawal of the vital stimuli of the blood and nervous influence from the stomach to the extremities is sufficient almost to stop the digestive process.

"This is no supposition, but demonstrated fact; and accordingly there is a natural and marked aversion to active pursuits after a full meal. In a dog, which had hunted for an hour or two directly after eating, digestion was found, on dissection, to have scarcely begun; while in another dog, fed at the same time, and left at home, digestion was nearly completed."

In one family the temperaments of children

may be very various. This is too frequently overlooked in young children, and the consequence is, that when a little family is sent out with a nurse, if one child expresses a reluctance to walk, it receives the opprobrious appellation of an idle, obstinate child. One cannot but pity the poor nurse, who has to carry heavy children a long distance. Yet it always delights me to see them rebel against the nurse's authority on this point. Almost all children prefer walking, if their strength is equal to it. But some young mothers err in teaching their children to walk too soon, and it is well when such little creatures are dull scholars in this part of their education. If, before they can walk, they are disposed to play the quadruped, by employing the hands and knees, the exercise is good, and should be encouraged, but watchfulness is necessary, to prevent the foot from being turned under the body, for this is one cause of turned ankles and bowed legs. The exercises best adapted for young children are those which spring from the freaks of their own will. Mothers and nurses frequently require instruction on the manner of teaching children

to walk, and I refer with pleasure to Mr. Walker's remarks on this subject:—

"Some medical advisers have said that the exercise which children who cannot yet walk should be made to take, ought not to consist in being suspended by the armpits, to make them beat the ground with their feet. All the apparatus of leading-strings, by means of which nurses foolishly think to make them walk before the time appointed by nature, compresses the chest, lifts up the shoulder, frequently stops the circulation of the blood in the vessels about the armpits, and injures the respiration and circulation. The lateral deviation also of the knee-joints and ankle-joints may arise from the absurd eagerness of parents to make their children walk before their limbs are sufficiently strong to bear the disproportionate weight that the trunk presents at this age.

"Children's walks in the open air should be frequent rather than long, and when they return home, they should be encouraged to roll themselves about the carpet."

Mr. Walker's exercises for young ladies com-

bine those which are calculated to give elegant and graceful movements with those which tend to strengthen the muscular system, if the figure is quite straight; but if any curvature exists, some of them, and especially the sceptre exercises, might be very injurious. Many of the gymnastic exercises are also exceedingly beneficial for healthy children, but are not admissible if spinal deviation or disease has commenced; for, if the points of the short ribs have been withdrawn from their proper situation, they may be suddenly jerked up under the angle of the long ribs, and the body thereby lose its balance. I have seen great mischief arise from this cause; indeed, many of my patients have told me that they never discovered any curvature, until they had taken lessons in gymnastic exercises. It might, however, have existed in a slight degree before, although unperceived. Dr. Combe's observations on this subject are worthy of close observation.

"Gymnastic and calisthenic exercises have been in vogue for some years, for the purpose of promoting muscular and general growth and strength, but they are now rather sinking in

public estimation, entirely, I believe, from overlooking the necessity of adapting the kind and extent of them, not only to the individual constitution, but to the natural structure of the body, the consequence of which has been, that some of the more weakly pupils have been injured by exertions beyond their strength, and discredit has been brought on the system. It is certain, indeed, that some of the common gymnastic exercises are altogether unnatural, and at variance with the design of the bodily organization; and the others are fit only for robust and healthy boys, and not at all for improving those who are delicately constituted, and who stand most in need of a well-planned training. It is impossible to enter minutely into this subject at present, but the best guide we can have is to follow the footsteps of nature, and before adopting any exercise, to consider whether it is in harmony with the mode of action assigned by the Creator to the parts which are to perform it. If it be so, we may proceed with perfect confidence that it will not only improve the health, but add to the freedom, elegance, precision, and strength of our

movements, whereas if it be opposed to the obvious intention of the Creator, we may rest assured that no good can come from it. If, for example, we examine the various attitudes and motions of the body, which occur in fencing, dancing, swimming, shuttlecock-playing, and some of the better class of gymnastic exercises, we find that they are not less graceful and beneficial to the young who engage in them, than pleasing to those by whom they are witnessed, just because they are in perfect harmony with nature, or, in other words, with the structure and mode of actions of the joints, ligaments, and muscles by which they are executed. But it is far otherwise with some of the anomalous exercises which were at one time so fashionable, and which are not yet extinct in schools and gymnasia, and which seem to have for their chief object the conversion of future men and women into foresters, firemen, or savages, rather than into beings who are to continue to have the use of stairs, ladders, carriages, steamboats, and the other conveniences of civilized life. It is no doubt a good thing for a boy to be able to climb up a perpendicular pole or

a slippery rope, when no other means present themselves of attaining an important object at its upper end; and it is equally a good thing for a young lady to be able to sustain her weight hanging by one or both hands, when there is no possibility of resting her feet on *terra firma;* and where boys and girls are strong enough to take pleasure in such amusements, there is no great reason to hinder them, provided they are impelled to them, not by emulation or any secondary motive which may lead to over-exertion, but by the pure love of the exercise itself. In all ordinary circumstances, those only who are vigorously constituted will attempt them, and if left to themselves, will be sure to desist before any harm can be done. But the case is entirely altered when such extraordinary evolutions are not only encouraged, but taught to all indiscriminately, whether they be strong or weak, resolute or timid. We have only to reflect for a moment on the structure of the shoulder-joint, and of the sphere of action of the muscles surrounding it, to perceive at once that the position of the one and the strain of the other caused by

the exercises alluded to, are so forced and unnatural as to exclude the possibility of the Creator having intended either to be practised except upon occasions of urgent necessity, and to discover how preposterous it is therefore to make them a subject of general instruction. Nay, the very violence of the effort required to sustain the body, when hanging by the hands, is far beyond that moderate exertion which adds to nutrition and strength; and in delicate subjects it may even induce relaxation and stretching of the ligaments and bloodvessels, and thus, as in the case of a young man at Cambridge, lay the foundation of future and fatal disease. The same remarks apply to a common practice of making the pupils slide down an inclined plane, resting on the hands alone, by which unnatural effort the shoulders are pushed half way up the neck, and the wrists, arms, and chest, severely tried. But in these and other similar evolutions it requires only to look at the dragging and distortion they produce, and which form such a painful contrast to the ease and grace of all natural motions and attitudes, to perceive that they are *not of the*

order of nature, and that neither health nor elegance can result from them."

It has been the opinion of many that the same exercises are suitable for boys and girls, but this is a great mistake, their physical strength not being equal. The fly-ropes are not a safe or proper exercise for girls, of which I had an example in a young lady, who had suffered greatly from the use of them. She could not bring her arms close to her sides, and complained of great pain under the arms. On examining her, I found the serratus-magnus muscle inflamed and considerably enlarged.

The common exercise of the swing, of the skippingrope, of the shuttlecock and battledore, played by two with both hands, and many others of the same kind, such as children's own ingenuity will suggest, are good and safe; but both hands should be used in all.

Riding on horseback, even on ponies, is not safe for growing girls. I have known curvatures, spinal diseases, and other deformities produced by it. Mr. Walker positively prohibits horse exercise for ladies, but in this I cannot agree

with him; on the contrary, when a lady has attained her full growth, it is a natural, healthy, and, for a good horsewoman, safe exercise. When the frame is very flexible, caution is necessary in learning to ride, and for such a constitution a gentle horse is requisite. The rides of such persons should also be short, and when they return home, the recumbent position should be observed for a short time.

Dr. Combe says "it is a most salubrious exercise, and where the lungs are weak, possesses a great advantage over walking, as it does not hurry the breathing. It calls into more equal play all the muscles of the body, and at the same time engages the mind in the management of the animal, and exhilarates by the free contact of the air, and more rapid change of scene. Even at a walking pace, a gentle but universal and constant action of the muscles is required to preserve the seat, and adapt the rider's position to the movements of the horse; and this kind of muscular action is extremely favourable to the proper and equal circulation of the blood through the extreme vessels, and to the prevention of its undue accumulation in the central organs. The

gentleness of the action admits of its being kept up without accelerating respiration, and enables a delicate person to reap the combined advantage of the open air and proper exercise for a much longer period than could otherwise be possible."

Many of the deportment exercises taught in the first-class schools are exceedingly beneficial for girls, where no spinal deviation or deformity has taken place. A quotation, however, from Dr. Combe will express my entire view of the injurious effects of such exercises, where distortion exists:—

"I am aware that these exercises are said to stretch the spine, and to remedy its deformities; but it would be quite as sound logic to maintain, that because a broken leg requires to be tied up with splints and bandages, therefore the best way to strengthen a sound leg must be to bandage it also, as to infer that, because a few diseased spines require to be stretched, therefore all healthy spines must also derive benefit from the same process; although, in the latter case, it is obvious to reason that the stretching will be likelier to put the bones out of their places, than to fix them more firmly in those which they already

occupy. It is not by extravagant means that a soldier-like carriage is obtained in the army; and yet there, the uniformity of result—the erect and steady gait, is scarcely less remarkable than the discordant materials, and variety of slouchings, and awkward attitudes, out of which it is formed by perseverance in a rational system of drilling."

I would earnestly entreat all who have the responsible charge of growing children, both boys and girls, to examine their backs frequently; and if the slightest deviation is observable, to keep them from all exercises until proper advice has been obtained from some one who thoroughly understands the nature of deformities.

I have at present under my care an interesting little girl, who, but for the vigilant eye of her mamma, would have become a great sufferer from lateral curvature. She is one of those playful children, full of frisk and fun, whom fathers, elder brothers, and uncles, enjoy a romp with. In one of her playful freaks with an uncle, two of her short ribs were pushed up under the angle of the long ones, which caused an inclination to

one side, thereby displacing two of the joints of the dorsal vertebræ. The child's countenance soon displayed symptoms indicative of something wrong; yet she did not complain of pain. Had her appearance of lassitude been construed into idleness, and the child urged to take exercise which was not suitable, lateral curvature would rapidly have succeeded.

In order to show the danger of too rough play with young children, I will mention the case of another young lady, where the whole trunk of the body was dreadfully distorted. She was an only daughter, and, when young, a lively, frolicksome little creature, who always looked forward to her father's coming home with great delight, that she might entertain him with some new gesture. One evening, she welcomed him with more than usual animation; this inspired the fond father with increased emotion; he clasped her to his arms, and lifted her up, as he said, to touch the ceiling, and returned her hastily on her feet to the floor. From that fatal moment the father's joy was turned into sorrow; an existence of protracted misery commenced for the child,

and a life of mournful anxiety was the mother's doom.

What has been said on the present subject refers exclusively to growing children, with the view of preventing distortions. Many excellent works have been written for the guidance of those who are older. For the poor, however, these remarks are useless, their avocations being of such a nature as to preclude the possibility of parents watching over the exercises of their children.

Yet where their families are well regulated, domestic exercises, such as scouring rooms, rubbing furniture, &c., are far better for promoting health than any that are artificial. It is to me a matter of regret to see, in the free schools for girls, such exercises as fly-ropes suspended from high poles. Were one part of the day devoted by them to domestic purposes, and the other to mental improvement, there would be less of that indolence too often seen in girls of the rising generation.

Walking in the open air is equally accessible to every class, and the open air should be chosen

as much as possible for every kind of exercise; nor should it be forgotten that the hours to be employed are of more importance than many are aware of. Many other exercises might be brought forward, but for the sake of brevity, I must content myself with simply referring my reader to the works which have already been quoted.

On the importance of strict attention to muscular exertion, Dr. Combe says — "The evils arising from deficiency of exercise to all the functions of the mind and body will now be equally evident and intelligible, for they are the converse of what we have seen to be the advantages of adequate exercise. The circulation, from want of stimulus, becomes languid, especially in the extreme vessels; the feebleness of action occasions little waste of materials, and little demand for a new supply; the appetite and digestion, consequently, become weak, — respiration heavy and imperfect, — and the blood so ill-conditioned, that when distributed through the body, it proves inadequate to communicate the stimulus requisite for healthy and vigorous action. The concatenation of causes and consequences,

thus exhibited, cannot fail, when the principle connecting them is perceived, to interest and instruct every thinking mind."

On the subject of aliment, there are so many excellent works now in print, that it would be superfluous and presumptuous to introduce it here, but that it belongs to the intention of this little work to warn mothers and guardians of children against everything calculated to injure health, and thereby produce spinal disease: for, although so many volumes on dietetics have been written, they remain unread by thousands; many of them not having been written for the people, and others being too expensive to be purchased by them. Examples of this fact are constantly presenting themselves. I would observe, therefore, that, for the regulation of diet, theory alone must not be confided in, strict adherence to rules having frequently been more productive of evil than of good results. Some pathological laws must of necessity be absolute, such as the prohibition to overload the stomach; the giving of food or drinks too hot, too frequent, or too stimulating; the allowing of food to be taken when the body is

fatigued and over-heated, or without previous rest. But as in medicine, so in diet, that which will suit one constitution and promote health will in another produce disease. From early infancy all these should be carefully observed.

Some have insisted that, for infants, no other aliment should be given than what Nature has provided. Lichtenstein has been quoted to enforce this law, who remarks, "that amongst the Koossas, where the mother suckles her child two years, diseases among infants are rare." "It is very rare indeed," he adds, "to hear a child cry: all my companions agree with me in this point; we never knew an infant scream, or an older child weep."—*Voyage in Southern Africa.*

There can be little propriety, however, in comparing the natives of South Africa with the civilized women of England; the daily avocations of the former being performed in the open air, while those of the latter are confined exclusively to the house, and connected, in most instances with, the great anxiety and fatigue of providing for the many wants of civilized life.

Where the mother is healthy and strong, no

aliment equal to the natural one can be provided; but, if a babe does not thrive, there is an evident deficiency in the supply. In some instances, increased quantity of food taken by the mother feeds her own system, but not that of the child; and under such circumstances, either a nurse must be employed or another kind of food provided. In such cases, the food to be given as a substitute must be such as will suit the stomach. Goat's and ass's milk, if it can be obtained, is the lightest, and considered the most nutritive. If cow's milk is employed, it should always be drawn from one cow.

For some children all kinds of milk are too heavy, especially for a delicate child; whey is an improvement on milk, and some children have grown healthy and strong upon it, when the stomach has rejected every other kind of food. Some children do not thrive on milk alone, and when this is the case, sago, arrow-root, biscuit-powder, oatmeal well boiled, and boiled bread may be safely tried. When bread is boiled, a thick slice off the top of a loaf, crust and crumb together, should be put into a quart of cold

water, brought slowly to a boil, and kept boiling four hours, and then turned out into a basin; when cold it will be a stiff jelly, to which some milk may be added when used. I have found this agree with more constitutions than any other substance, but it will not agree with all.

Flour pressed closely in a dish and baked in a slow oven several hours, a tea-spoonful of it being then boiled in half-a-pint of milk, agrees well with some children if oatmeal-food be given once a day in connexion with it. When they can hold a crust of bread in their hands, it does them good to allow them to suck it—by subduing thirst and preventing their requiring food too often. Sweet cakes, made with eggs, seldom suit the stomach. No quantity of food can be safely prescribed; some parents, fearing excess, have erred by not allowing them sufficient, but this is not the general error. Mr. Ward observes, "A similar error, to which the disease may be often traced, is the abuse of the mode of diet, often adopted by nurses and others, not only during the period of weaning, but for some years afterwards, of loading the stomach with an unneces-

sary quantity of food, the defective nutrition of the body is to be attributed no less to excess of quantity than to the deficiency of nutriment; and I would appeal to the experience of others who have had extensive opportunities of observation in the disorders of children, whether the instances of diseases arising from privation of food be not much less frequent than those occasioned by the contrary extreme; by which the assimilatory organs are rendered incapable of connecting the superabundance into chyle proper for the nutrition of the body." At a more advanced period of childhood and in youth, good, plain, wholesome food with air and exercise will suit most constitutions. The proportion of nutriments, produced from different kinds of animal food and vegetables, may be found in all dietetical writings, but, when any kind of food positively disagrees with the stomach, young people should not be allowed to eat it. For example, a youth of delicate constitution was put under medical treatment, in consequence of extreme debility and disinclination to take any kind of common food; the only thing he could take being eggs

lightly boiled or poached, for even plain bread could not be retained on the stomach. His medical adviser recommended his confining his diet exclusively to eggs for a time, which he did six months in continuance. This succeeded in restoring him to good health. At the very time this plan of diet had been so beneficial, a lady who was under medical treatment told me she had a great desire for an egg, but was not allowed to take it because her medical adviser insisted that there was not any nutriment in eggs. This idea had been formed in consequence of eggs positively disagreeing with that gentleman, a circumstance which may serve in some degree to account for different opinions given by medical men respecting diet. Mutton chops are frequently recommended as the most easy of digestion, yet with many they produce considerable disturbance of the stomach.

White foods are often recommended, because they are less stimulating than others, but the want of the stimulating property renders them to some very difficult of digestion. Similar observations might be made respecting every kind of

food and drink. For example, tea and coffee are poisonous to some and beneficial to others; chocolate and cocoa, light and nutritious to some, but heavy and unsatisfactory to others. Warm toast-water is a pleasant and wholesome drink for many, yet because of the absence of oxygen it disagrees with others; and in some instances, when drunk with food, will cause it to be returned as soon as taken. Cold spring water agrees with most persons, yet in some instances it injures the digestive powers. The temperature of the climate in which a person resides, as well as the amount of physical or mental exertion which he is in the habit of taking, is a point to be observed in the regulation of the quantity and quality of food.

The enormous quantity of stimulating animal food, such as fat and oil, required for the support of life under the exposure to the intense cold of the polar regions, as mentioned by Franklin, Parry, and Richardson, is an appropriate example.

"The proposition will indeed be readily assented to, when the reader considers that a due supply of well-formed chyle is necessary to restore

the nourishing properties of the blood; and that if, in consequence either of insufficient food or of a weak digestion, this be rendered impossible, all the animal functions, among others the production of heat, must unavoidably be impaired. Habitual exercise in a hilly country, and the frequent ascent of acclivities, especially in pursuit of an object, increase the capacity of the chest, promote free circulation through the pulmonary vessels, and lead to the more complete oxygenation of the blood. Hence the vigorous appetite." (Dr. Combe.)

The preceding statements have not been made with any intention of encouraging fastidiousness in healthy young people; it would be exceedingly injurious to indulge whimsical fancies; good air and exercise will give a relish to all wholesome food. In families and schools, it would be impossible to suit the taste of each individual; but where delicacy of constitution exists, with little appetite, it is well, without appearing to observe it, to avoid providing for them those things to which they have an aversion. It tends greatly to produce a morbid sensibility of mind, to appear

to notice the appetite with which the meals are taken. Many things occur to alter the desire for food: sometimes the stomach requires a little rest; at this symptom indulgent parents sometimes take alarm, but an interval of abstinence would often set all right. If it do not, a medical friend should be consulted, as many long illnesses, including fevers of all kinds, might be prevented by attention to early symptoms. It would greatly improve the sanitary condition of all classes of society, if medical men were engaged annually by families, whether sick or well, to visit them once a week; while, in an economical point of view, it would prove to many a considerable item in the lessening of their expenditure.

It would not, however, be desirable that rules for diet should always be observed for those who are in health. I know one family who, through the mistaken love and anxiety of the mother, was not allowed to eat anything but what was ordered by a physician, who was engaged to prescribe for each what the diet should be during the week; the consequence was, if they deviated at any time from these rules, a fit of illness was the result.

An eminent physician belonging to the army, in describing his own state, says, "I have wandered a good deal through the world, and never followed any prescribed rule in anything; my health has been tried in all ways, and by the aid of temperance and hard work, I have worn out two armies in two wars, and probably could wear out another before my period of old age arrive. I eat no animal food, drink no wine, or malt liquor, or spirits of any kind. I wear no flannel, and neither regard wind or rain, heat or cold, when business is in the way." Where proper exercise cannot be taken, the appetite is seldom good (indeed the system requires less), but it may be much improved by a warm bath once a week, and by sponging the body all over every morning with cold water, and rubbing it dry with a coarse towel. This is now constantly practised by many, yet thousands never think of it. A vapour bath properly administered, where the steam is condensed, taken at least once a month, is very beneficial to health. Many persons take them once a week, instead of the warm

water bath, with great advantage, and consider it a great luxury.

The advantage of bathing in the sea is too well known to require recommendation, but sea bathing should always be preceded by the warm or vapour bath.

Too much mental exertion, by causing over-excitement of the brain, may also lay the foundation of spinal disease. Nothing can be more clear than Dr. Combe's observation in reference to it: "At any time of life excessive and continued mental exertion is hurtful; but in infancy and early youth, when the structure of the brain is still immature and delicate, permanent mischief is more easily inflicted by injudicious treatment than at any subsequent period, and in this respect the analogy is complete between the brain and the other parts of the body, as we have already seen exemplified in the injudicious effects of premature exercise of the bones and muscles. Scrofulous and rickety children are the most usual sufferers in this way. They are generally remarkable for large heads, great precocity of understanding, and small delicate bodies. But

in such instances the great size of the brain and the acuteness of mind are the results of morbid growth, and even with the best management the child passes the first years of its life constantly on the brink of active disease. Instead, however, of trying to repress its mental activity, the fond parents, misled by the early promise of genius, too often excite it still further, by increasing cultivation, and the never-failing stimulus of emulation and praise; and finding its progress for a time equal to their warmest wishes, they look forward with ecstasy to the day when its talents will break forth and shed a lustre on its name. But in exact proportion as the picture becomes brighter to their fancy, the probability of its being realized becomes less, for the brain, worn out by premature exertion, either becomes diseased or loses its tone, leaving the mental powers slow and depressed for the remainder of life. Taking for our guide the necessities of the constitution, it will be obvious that the modes of treatment commonly resorted to ought to be reversed, and that, instead of straining to the uttermost the already irritable powers of the precocious child,

and leaving his dull competitor to ripen at leisure, a systematic attempt ought to be made, from early intimacy, to rouse to action the languid faculties of the latter, while no pains ought to be spared to moderate and give tone to the activity of the former. Instead of this, however, the prematurely intelligent child is generally sent to school, and tasked with lessons at an unusually early age, while the healthy but more backward boy, who requires to be stimulated, is kept at home in idleness perhaps for two or three years longer, merely on account of his backwardness. A double error is here committed, and the consequence to the clever boy is frequently the permanent loss, both of health and of his envied superiority of intellect. In this country children are not generally sent to school so early, but education is still too much restricted to the exclusive exercises of the mental powers, to the neglect of the physical, and in the instance of delicate children is pushed on too rapidly. I lately witnessed the fate of one of these early prodigies, and the circumstances were exactly such as those above described. The prematurely

developed intellect was admired, and constantly stimulated by injudicious praise, and by daily exhibition to every visitor who chanced to call. Entertaining books were thrown in the way, reading by the fireside encouraged, play and exercise neglected, the diet allowed to be full and heating, and the appetite pampered with every delicacy. The results were, the speedy deterioration of a weak constitution, a high degree of nervous sensibility, and deranged digestion. In youth too much mischief is done by the long daily periods of attendance at school, and the continued application of mind which the ordinary system of education requires. The law of exercise—that long sustained exercise, exhausts the vital powers of an organ, applies, I cannot too often repeat, as well to the brain as to the muscles, and hence the necessity of varying the occupation of the young, and allowing frequent intervals of active exercise in the open air, instead of enforcing the continued confinement, now so common. This exclusive attention to mental culture fails, as might be expected, even in its essential object, for experience shows that

with a rational distribution of employment and exercise, a child will make greater progress than in double the time employed in continued mental exertion. If the human being were made up of nothing but a brain and nervous system, it would be very well to content ourselves with sedentary pursuits, and to confine ourselves entirely to the mind. But when observation tells us that we have numerous other important organs of motion, sanguification, digestion, circulation, and nutrition, all demanding exercise in the open air, as essential both to their own health and to that of the nervous system, it is worse than folly to shut our eyes to the truth, and to act as if we could by denying it alter the constitution of nature, and thereby escape the consequences of our misconduct.

"Dr. Bringham remarks, that it is ignorance in parents which leads to the too early and excessive cultivation of the minds of children, especially those who are precocious and delicate; but from the examples which he gives, and the general bearing of his admonitions, the error of commencing systematic education too soon, and

stimulating the infant mind too highly, seems to be decidedly more prevalent in the United States than in this country."

What has been said on the subject of dress, exercise, diet, and mental exertion, are merely suggestions thrown out with a view of leading the minds of mothers, and those who have the care and responsibility of children, to exert their own ingenuity, in carrying out a system of training the human frame for physical and mental usefulness. And the mainspring for such an object is the study of the structure of the body. Some ladies may startle at this, considering such a science to belong exclusively to the faculty; but, if the study of botany and geology is worthy of the attention of women, it is of infinitely more importance to know the construction of the beautiful mechanism of the bodies of our offspring. The American ladies have taken the lead of us, by making it a prominent part of their education. Dr. Combe, in the preface of his excellent work on the subject, insists upon the necessity of it; and, numerous as our quotations have already been, a few extracts shall be

given, with the view of bringing it before the attention of those who have not seen his work:—

"The little regard which has hitherto been paid to the laws of the human constitution, as the true basis on which our attempts to improve the condition of man ought to rest, will be obvious from the fact, that notwithstanding the direct uses to which a knowledge of the conditions which regulate the healthy action of the bodily organs may be applied in the prevention, detection, and treatment of disease, there is scarcely a medical school in this country in which any special provision is made for teaching it, the pupil being left to elaborate it for himself from amidst information communicated to him for other purposes. In my own instance, it was only when entering upon practice that I had first occasion to feel and to observe the evils arising from the ignorance which prevails in society in regard to it. Impressed afterwards more deeply than ever with the interest and utility of the study, I contributed two or three articles on the subject to one of the periodical journals, and resolved to make them the basis, at some future

time, of a more detailed and connected exposition. This I have now attempted,—not, I need scarcely add, with the view of superseding the physician, by making every man his own doctor, or of recommending the general perusal of professional treatises, for both practices induce many more ailments than they cure; but simply with the hope that the method which I have followed of connecting physiological details with practical applications may be found useful and interesting to both the student and general reader.

"He who is instructed in and familiar with grammar and orthography, writes and spells so easily and accurately, as scarcely to be conscious of attending to the rules by which he is guided; while he, on the contrary, who is not instructed in either, and knows not how to arrange his sentences, toils at the task, and sighs at every line. The same principle holds in regard to health. He who is acquainted with the general constitution of the human body, and with the laws which regulate his action, sees at once his true position, when exposed to the causes of disease. The obvious and peculiar advantages of this kind of

knowledge are, that it would enable its possessor to perceive why certain circumstances are beneficial or injurious. There is a physiology of the mind as well as of the body; both are so intimately united, that neither can be well understood without the study of the other; and the physiology of man comprehends both. Were even what is already known of this science, and which might be easily communicated, made a part of general education, how many evils would be avoided—how much light would be let in upon the understanding—and how many aids would be afforded to the acquisition of a sound body and vigorous mind, prerequisites more important than are commonly supposed to the attainment of wisdom and the practice of virtue."

It may by some be considered an argument against the necessity of making physiology a study, and of attending to its laws, that among the poor, where but little attention can be paid to their offspring, fewer cases of spinal curvatures occur than among the rich. It is true that the children of the poor whose lives extend beyond infancy are healthy and robust, because delicate

children, through want of proper attention, seldom survive the diseases attendant on dentition and other infantine complaints; but if they do survive that period, many are subjects of frightful distortion.

Even during the time that the preceding remarks have been committed to paper, various cases have presented themselves to confirm the importance of urging mothers to vigilant watchfulness—to detect the first appearance of disease, or the slightest deviation of the spine. It is incalculable how much misery may be involved in the neglect of this imperative duty. Perhaps few enter sufficiently into the feelings of those who spend years of suffering, not only from pain of body, but from mental distress through blighted prospects; in some instances, greatly augmented by the consequences, that their parents evince a reluctance to introduce them into company, and do not feel the same pleasure in walking out with them as with those whom Nature has more highly favoured. Some tender, kind-hearted, parents may doubt the possibility of this, and consider it

a mere suspicion, but frequent communications of this nature have been made to me.

Another source of misery, connected with deformities in children, is the suspicion sometimes produced in the minds of parents towards each other; who, when spinal disease appears, are prone to think it hereditary, and to fancy the possibility of something having been concealed by their ancestors, on one side or the other; and not unfrequently have these suspicions been confirmed by the opinion, sometimes given by medical men, that all spinal diseases originate in scrofulous constitutions. In some instances, however, this is found to be a fatal error, not only by the distress occasioned in the minds of parents, but in the serious consequences which follow a wrong treatment of the disease.

A case now under my care confirms this statement. A little boy, three years of age, had twice fallen from the bed; nothing, however, in the appearance of the child excited any alarm, until several months after, when there appeared a projection including four of the dorsal vertebræ;

eight below were inverted; the cervical or neck joints were also inverted; the clavicles or collar-bones were depressed; and the ribs, from the tops of the arms to the breast-bone, were also depressed, presenting the appearance of the breast of a fowl, when the merry-thought is removed. Four of the ribs below were thrown out on one side, and the abdomen was greatly extended. When he stands, the legs appear bowed; the tops of the arms are thrown forwards, and the elbows angled at the back like the wings of a bird.

He had been under medical treatment previous to his coming to me, and, from his emaciated appearance, was treated for disease of the spine, by the application of blisters to the back and chest, and with the usual medicines given in such cases.

Through this treatment, his difficulty of breathing and debility increased. The appearance of the child might easily deceive any one who had not made deformities of the body a practical study.

The child has now been under my care a fortnight; the usual treatment is being carried out,

and already there are evident marks of improvement.

This is one case out of thousands, which, if traced to their commencement, would be found to originate from inattention, unequal pressure by dress, improper position, over-mental exertion, want of muscular exercise, too much physical exertion, or from accidents.

Mr. Ward observes—"Distortion of the spine, arising from muscular debility, may be distinguished from disease of its bony structure, not only from its mode of termination, but by an attention to the general history of the complaint."

In closing, therefore, these practical hints, I would seriously urge upon the reader's attention the importance of remembering that some constitutions are predisposed to one disease much more than to another, and that a peculiar symptom, whensoever it appears, should receive immediate care.

THE END.

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